Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (**Currently Amended**) A method for identifying ~~an OP-1 receptor~~ a binding analog for a receptor of a morphogen, said morphogen being characterized as sharing at least 60% identity or 70% homology to the C-terminal 102 amino acids of SEQ ID NO: 7, and being able to substitute for OP-1 in binding to SEQ ID NOs. 4, 6, or 8, said analog being characterized as having substantially the same binding affinity for ~~a cell surface~~ said morphogen receptor as ~~OP-1~~ said morphogen, the method comprising ~~the steps of~~:

   (a) providing a sample without a Type II serine/threonine kinase morphogen receptor but containing a protein selected from ~~the group consisting of~~:

      (i) a polypeptide chain comprising an amino acid sequence defined by residues 16-123 of ~~Seq. ID No. 3~~ SEQ ID NO: 4 (ALK-2), or an OP-1-binding receptor analog thereof;

      (ii) a polypeptide chain comprising an amino acid sequence defined by residues 24-152 of ~~Seq. ID No. 5~~ SEQ ID NO: 6 (ALK-3),~~,~~ or an OP-1-binding receptor analog thereof;

      (iii) a polypeptide chain comprising an amino acid sequence defined by residues 23-122 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6),~~,~~ or an OP-1-binding receptor analog thereof;

      (iv) a polypeptide chain having binding affinity for OP-1 and sharing at least 40% amino acid identity with residues 23-122 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6)~~,~~;

      (v) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid obtainable by amplification with one or more primer sequences defined by ~~Seq. ID Nos.~~ SEQ ID NOs: 12-15; or

      (vi) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid that hybridizes under stringent conditions with a nucleic acid comprising the sequence defined by nucleotides 256-552 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6)~~,~~;

(b) contacting said sample with a candidate ~~OP1~~ morphogen receptor-binding analog; and

(c) detecting specific binding between said candidate ~~OP1~~ morphogen receptor-binding analog and said protein;

wherein binding of said candidate morphogen receptor-binding analog to said protein is indicative that said candidate analog is a morphogen receptor-binding analog.

2. (**Currently Amended**) A method for identifying an OP-1 receptor-binding analog, said analog being characterized as having substantially the same binding affinity for a cell surface receptor as OP-1, the method comprising ~~the steps of~~:

(a) providing a cell that expresses a surface receptor protein having binding specificity for OP-1 selected from ~~the group consisting of~~:

(i) a polypeptide chain comprising an amino acid sequence defined by residues 16-123 of ~~Seq. ID No. 3~~ SEQ ID NO: 4 (ALK-2), or an OP-1-binding receptor analog thereof;

(ii) a polypeptide chain comprising an amino acid sequence defined by residues 24-152 of ~~Seq. ID No. 5~~ SEQ ID NO: 6 (ALK-3),~~,~~ or an OP-1-binding receptor analog thereof;

(iii) a polypeptide chain comprising an amino acid sequence defined by residues 23-122 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6),~~,~~ or an OP-1 binding receptor analog thereof;

(iv) a polypeptide chain having binding affinity for OP-1 and sharing at least 40% amino acid identity with residues 23-122 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6)~~,~~;

(v) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid obtainable by amplification with one or more primer sequences defined by ~~Seq. ID Nos.~~ SEQ ID NOs: 12-15; or

(vi) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid that hybridizes under stringent conditions with a nucleic acid comprising the sequence defined by nucleotides 256-552 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6)~~,~~;

(b) contacting said cell with a candidate OP-1 receptor-binding analog; and

(c) detecting induction of an OP-1-mediated cellular response;

wherein detection of induction of said OP-1-mediated cellular response is indicative that said candidate analog is an OP-1 receptor-binding analog.

3. (**Original**) The method of claim 2 wherein said OP-1 mediated cellular response detected in step (c) is induction of a kinase activity, inhibition of epithelial cell growth, or induction of a cell differentiation marker.

4. (**Currently Amended**) The method of claim 2 or 3 wherein said cell comprises a transfected nucleic acid comprising a reporter gene in operative association with a control element derived from an OP-1 inducible protein, and wherein the activity of said reporter gene can be detected as said OP-1-mediated cellular response upon stimulation by OP-1 or analog thereof in said cell.

5. (**Currently Amended**) The method of ~~any of claims 1-4~~ claim 2 or 3, wherein ~~said sample~~ said surface receptor protein further comprises part or all of a Type II serine/threonine kinase receptor protein having binding affinity for OP-1, activin or BMP-4.

6-7. (**Canceled**)

8. (**Currently Amended**) A kit for identifying OP-1 or a candidate OP-1 receptor binding analog in a sample, the kit comprising:

(a) a receptacle adapted to receive ~~a~~ said sample, said receptacle ~~and~~ containing a protein selected from ~~the group consisting of~~:

(i) a polypeptide chain comprising an amino acid sequence defined by residues 16-123 of ~~Seq. ID No. 3~~ SEQ ID NO: 4 (ALK-2), or an OP-1-binding receptor analog thereof;

(ii) a polypeptide chain comprising an amino acid sequence defined by residues 24-152 of ~~Seq. ID No. 5~~ SEQ ID NO: 6 (ALK-3),~~,~~ or an OP-1-binding receptor analog thereof;

(iii) a polypeptide chain comprising an amino acid sequence defined by residues 23-122 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6),~~,~~ or an OP-1 binding receptor analog thereof;

(iv) a polypeptide chain having binding affinity for OP-1 and sharing at least 40% amino acid identity with residues 23-122 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6)~~,~~;

(v) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid obtainable by amplification with one or more primer sequences defined by ~~Seq. ID Nos.~~ SEQ ID NOs: 12-15; or

(vi) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid that hybridizes under stringent conditions with a nucleic acid comprising the sequence defined by nucleotides 256-552 of ~~Seq. ID No. 7~~ SEQ ID NO: 8 (ALK-6)~~,~~; and

(b) means for detecting induction of an OP-1-mediated cellular response as a means for detecting interaction of OP-1 or a candidate OP-1 receptor-binding analog with said protein of part (a), said OP-1 or candidate analog comprising part of said sample provided to said receptacle.

9. **(Canceled)**

10. **(Currently Amended)** The kit of claim 8~~,~~ ~~or 9~~ further comprising a serine/threonine Type II receptor having binding specificity for OP-1, activin or BMP-4.

11-27. **(Canceled)**

28. **(New)** The method of claim 1, wherein said morphogen is OP-1.

29. **(New)** The method of claim 1, wherein said morphogen is 60A, DPP, OP-2, OP-3, BMP-2, BMP-4, BMP-5, BMP-6, Vg1, GDF-1, or Vgr-1.

30. **(New)** The method of claim 4, wherein said surface receptor protein further comprises part or all of a Type II serine/threonine kinase receptor protein having binding affinity for OP-1, activin or BMP-4.

31. (**New**) A kit for identifying a binding analog for a receptor of a morphogen in a sample, said morphogen being characterized as sharing at least 60% identity or 70% homology to the C-terminal 102 amino acids of SEQ ID NO: 7, and being able to substitute for OP-1 in binding to SEQ ID NOs. 4, 6, or 8, the kit comprising:

(a) a receptacle adapted to receive said sample, said receptacle does not contain a Type II serine/threonine kinase morphogen receptor but contains a protein selected from:

(i) a polypeptide chain comprising an amino acid sequence defined by residues 16-123 of SEQ ID NO: 4 (ALK-2), or an OP-1-binding receptor analog thereof;

(ii) a polypeptide chain comprising an amino acid sequence defined by residues 24-152 of SEQ ID NO: 6 (ALK-3), or an OP-1-binding receptor analog thereof;

(iii) a polypeptide chain comprising an amino acid sequence defined by residues 23-122 of SEQ ID NO: 8 (ALK-6), or an OP-1 binding receptor analog thereof;

(iv) a polypeptide chain having binding affinity for OP-1 and sharing at least 40% amino acid identity with residues 23-122 of SEQ ID NO: 8 (ALK-6);

(v) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid obtainable by amplification with one or more primer sequences defined by SEQ ID NOs: 12-15; or

(vi) a polypeptide chain having binding affinity for OP-1 and encoded by a nucleic acid that hybridizes under stringent conditions with a nucleic acid comprising the sequence defined by nucleotides 256-552 of SEQ ID NO: 8 (ALK-6); and

(b) means for detecting specific binding interaction of OP-1 or said candidate analog with said protein of part (a), said OP-1 or candidate analog comprising part of said sample provided to said receptacle.

32. (**New**) The method of claim 1, wherein said protein is a polypeptide chain comprising an amino acid sequence defined by residues 16-123 of SEQ ID NO: 4 (ALK-2).

33. (**New**) The method of claim 1, wherein said protein is a polypeptide chain comprising an amino acid sequence defined by residues 24-152 of SEQ ID NO: 6 (ALK-3).

34. (**New**) The method of claim 1, wherein said protein is a polypeptide chain comprising an amino acid sequence defined by residues 23-122 of SEQ ID NO: 8 (ALK-6).

35. (**New**) The method of claim 2, wherein said surface receptor protein is a polypeptide chain comprising an amino acid sequence defined by residues 16-123 of SEQ ID NO: 4 (ALK-2).

36. (**New**) The method of claim 1, wherein said surface receptor protein is a polypeptide chain comprising an amino acid sequence defined by residues 24-152 of SEQ ID NO: 6 (ALK-3).

37. (**New**) The method of claim 1, wherein said surface receptor protein is a polypeptide chain comprising an amino acid sequence defined by residues 23-122 of SEQ ID NO: 8 (ALK-6).

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38. (**New**) The kit of claim 8 or claim 31, wherein said protein is a polypeptide chain comprising an amino acid sequence defined by residues 16-123 of SEQ ID NO: 4 (ALK-2).

39. (**New**) The kit of claim 8 or claim 31, wherein said protein is a polypeptide chain comprising an amino acid sequence defined by residues 24-152 of SEQ ID NO: 6 (ALK-3).

40. (**New**) The kit of claim 8 or claim 31, wherein said protein is a polypeptide chain comprising an amino acid sequence defined by residues 23-122 of SEQ ID NO: 8 (ALK-6).